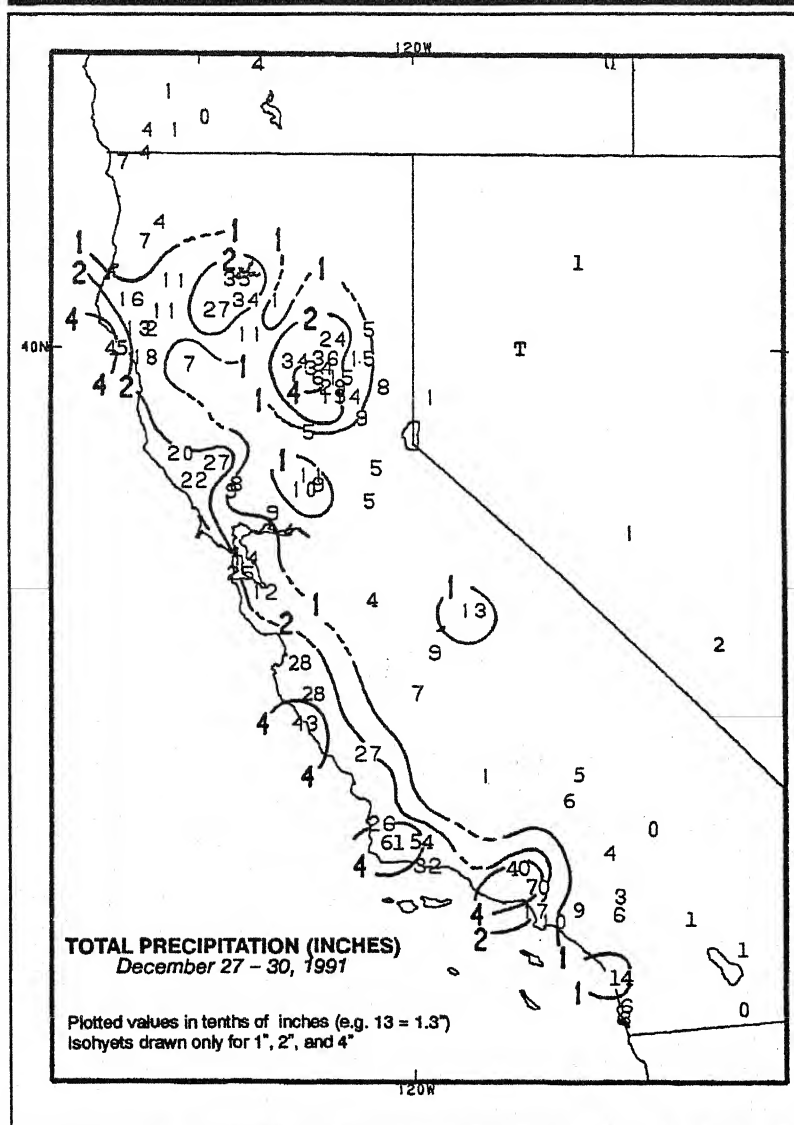


# WEEKLY CLIMATE BULLETIN

No. 91/52

Washington, DC

December 28, 1991



A pair of Pacific storms during December 27 - 30 brought much of California the first significant precipitation during the 1991 - 92 rainy season. The storms drenched most coastal sections of the state with over 2 inches of rain, with over half a foot inundating Encino and 4 inches falling on Valencia. The heavy rains caused flooding in metropolitan Los Angeles, Santa Barbara, and Ventura counties. Up to four feet of snow buried the southern Sierra Nevadas. Farther north, Blue Canyon was blanketed with nearly two feet, and Mount Shasta received more than a foot. Mount Wilson, east of Los Angeles, measured 9 inches of snow. Winds gusting to 45 mph and snow forced the closure of Interstate 5, about 75 miles north of Los Angeles. Despite the badly-needed precipitation, state authorities warned that it would take a full season of abnormally heavy rain and snow to bring this season's precipitation levels close to normal.



**UNITED STATES DEPARTMENT OF COMMERCE**  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL WEATHER SERVICE-NATIONAL METEOROLOGICAL CENTER  
**CLIMATE ANALYSIS CENTER**



# WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- *Highlights of major climatic events and anomalies.*
- *U.S. climatic conditions for the previous week.*
- *U.S. apparent temperatures (summer) or wind chill (winter).*
- *Global two-week temperature anomalies.*
- *Global four-week precipitation anomalies.*
- *Global monthly temperature and precipitation anomalies.*
- *Global three-month precipitation anomalies (once a month).*
- *Global twelve-month precipitation anomalies (every three months).*
- *Global three-month temperature anomalies for winter and summer seasons.*
- *Special climate summaries, explanations, etc. (as appropriate).*

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Climate Analysis Center via the Global Telecommunications System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

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# GLOBAL CLIMATE HIGHLIGHTS

## MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF DECEMBER 28, 1991

### 1. Western United States:

#### **SIGNIFICANT RAINS FINALLY BEGIN.**

Powerful Pacific storms dumped copious amounts of precipitation on much of drought-parched California during the latter part of the week (see front cover). More than 50 mm fell across northern parts of the state, while heavy snows buried the southern Sierra Nevada. The southern coast received the first substantial rain of the current wet season. Despite the beneficial precipitation, six-week deficits of 50 - 160 mm still prevailed across much of California, and much more moisture is needed to relieve the effects of five years of persistently below normal precipitation [8 weeks].

### 2. Southern Plains, Lower Mississippi Valley, and Tennessee Valley:

#### **MORE RAIN AGGRAVATES FLOODING.**

Additional rains of up to 75 mm continued flooding across southeastern Texas. The flooding caused by days of heavy rain that began the previous week has killed at least 15 people, inundated farmland and homes, drowned livestock, and caused an estimated \$75 million in damage, according to press reports. Flooding was particularly severe along the Guadalupe, Brazos, Trinity, and Colorado Rivers. Flood waters, however, began to recede along the Colorado as dry weather covered the state at week's end. Light to moderate rain (3 - 25 mm) eased dampness over much of the lower Mississippi Valley but, up to 84 mm of rain kept the Tennessee Valley abnormally wet [10 weeks].

### 3. South Atlantic Coast:

#### **MODERATE TO HEAVY RAINS EASE DRYNESS.**

A slow moving frontal system spread moderate to heavy rains (25 - 85 mm) across parts of Georgia and the Carolinas,

relieving dry conditions. Little or no rain, however, kept Florida and southeastern Georgia dry. Six-week precipitation shortfalls of 50 - 100 mm remained along much of the southern Atlantic Coast [12 weeks].

### 4. East-Central South America:

#### **ABNORMALLY WET WEATHER CONTINUES.**

Widespread moderate to heavy rainfall (40 - 150 mm) again drenched much of southern Brazil, Uruguay, southern Paraguay, and northeastern Argentina. Moisture surpluses of 50 - 225 mm since mid-November have accumulated over much of the region [5 weeks].

### 5. Southeastern Europe, Northeastern Africa, and Western Middle East:

#### **CHILLY CONDITIONS REMAIN.**

Weekly temperatures ranged from 3°C to 8°C below normal from the Alps to southern Egypt and western Iran as cold weather continued to grip the area [6 weeks].

### 6. The Eastern Mediterranean:

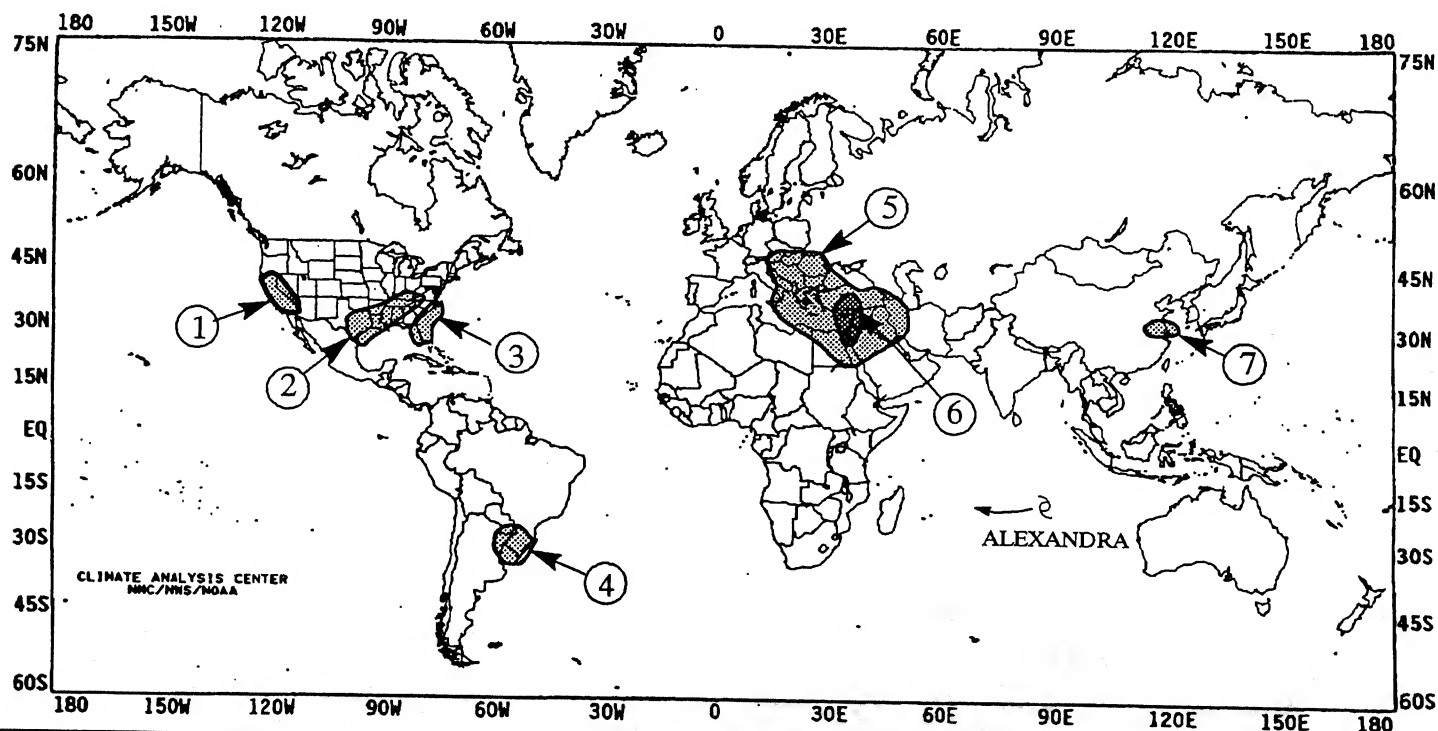
#### **HEAVY PRECIPITATION RESUMES.**

Following a relatively tranquil week, torrential rains again raised river levels and flooded residential areas in Israel, killing at least three people, according to press reports. In western and central Turkey, heavy snow blocked many roads while high winds downed power lines, fatally electrocuting four people [4 weeks].

### 7. East-Central China:

#### **HEAVY PRECIPITATION ENDS DRY SPELL.**

A strong cold front brought relatively heavy precipitation of 30 - 70 mm to east-central China, bringing an end to the short-term dry spell. Snowfall of up to 40 mm blanketed Shanghai, the heaviest amount since 1949 [Ended after 14 weeks].



#### **EXPLANATION**

TEXT: Approximate duration of anomalies is in brackets. Precipitation amounts and temperature departures are this week's values.  
MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this Bulletin for current two week temperature anomalies, four week precipitation anomalies, long-term anomalies, and other details.

# UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

## FOR THE WEEK OF DECEMBER 22 – 28, 1991

The astronomical Winter of 1991–92 commenced with heavy rain and snow across parts of California and continued flooding in southern Texas. More than 4 inches of rain soaked coastal locations in northern California, one and two inches fell on the Los Angeles basin, and nearly a foot of snow blanketed the Sierra Nevadas, with Echo Summit, CA measuring 9 inches on Saturday. Farther east, flooding continued to plague a large portion of southeastern Texas after copious rain inundated the state a week earlier. Numerous downstream rivers were swollen or overflowed their banks, flooding roads and hundreds of homes, and forcing the evacuation of thousands of residents, according to press reports. The most extensive flooding occurred along the Trinity, Guadalupe, Brazos, and Colorado Rivers. Up to 500 homes were affected by flood waters in 14 northern Texas counties, and early damage estimates across the state were \$75 million. Elsewhere, unusually mild weather prevailed from the northern Rockies to the Great Lakes. Record daily highs were established from South Dakota to Michigan with temperatures reaching nearly 20°F above normal at some locations. In sharp contrast, wintry weather dominated the central and southern Rockies and High Plains. Heavy snow and strong wind gusts produced blizzard-like conditions in northeast Colorado Sunday, closing a segment of Highway 63. Snow reached as far south as El Paso, TX where 2.5 inches was reported on Dec. 26. In Alaska, blizzard conditions affected the Pribilof Islands while wind chills below –40°F occurred in the southwest corner of the state.

The week began with an area of low pressure in the southern Plains continuing to generate heavy rains across portions of already-saturated Texas. Austin, TX measured nearly 2 inches of additional rain on Sunday, and widespread flooding was reported along several rivers. Along the San Gabriel River, record flooding left up to 5 feet of water on roads in Jim Hogg County. Flooding also forced the closure of portion of I–45 south of Dallas, TX. To the northwest, a secondary area of low pressure produced wintry weather in Colorado, with a foot of snow reported at Otis. The two storms eventually merged over the middle Mississippi Valley, spreading rain across the Southeast and Tennessee Valley, and mixed precipitation from the Midwest into southern New England as moisture collided with cold, Canadian air. The low and associated cold front eventually moved off the East Coast. Farther west, high pressure dominated the western U.S. In the Pacific Northwest, however, rain moved onshore in advance of a cold front.

During the last half of the week, flood waters continued to move downstream in southeastern Texas, spreading out as much as

4 miles wide along the Brazos River. Evacuations were necessary in some communities as roads were submerged under water. Additional rains fell on Texas during Thursday, however, amounts were generally less than an inch. By Saturday, flooding had subsided somewhat on the Colorado River after cresting on Friday, according to press reports. Elsewhere, the first major storm of the 1991–92 rainy season moved into California as moderate rains fell along coastal sections while heavy snow whitened the mountains. Up to 3 inches of rain was measured late Saturday at Santa Barbara, CA. Some flooding was reported in Los Angeles and Ventura counties.

According to the River Forecast Centers, the greatest weekly totals (more than 2 inches) occurred in southeastern Texas, along the central Gulf Coast, in the coastal Plains of the Carolinas and Georgia, southern and central Appalachians, Tennessee Valley, northern California, and southeastern Alaska [Table 1]. Light to moderate amounts were recorded across the southern half of New England, the mid-Atlantic, Ohio Valley, the middle and lower Mississippi Valley, central and southern Plains, along the West Coast, in west-central and southern Alaska, and most of Hawaii. Little or no precipitation fell on northern New England, the Great Lakes, upper Midwest, northern Plains and Rockies, Intermountain West, and northern Alaska.

Atypically mild winter weather prevailed across a large portion of the country. Weekly departures between +10°F and +18°F were observed from the northern Rockies to the upper Midwest [Table 2]. Departures of +4°F to +9°F were recorded from central New England southward to the west-central Gulf Coast, across the central Great Plains, and most of the Far West. Near to slightly above normal temperatures occurred along the mid-Atlantic Coast, in the southern Rockies, and scattered locations in the Great Basin. In Alaska, abnormally warm weather enveloped the eastern two-thirds of the state with departures between +6°F and +17°F common across the southeast. Departures of +3°F to +9°F were reported from parts of the southwest to north-central sections.

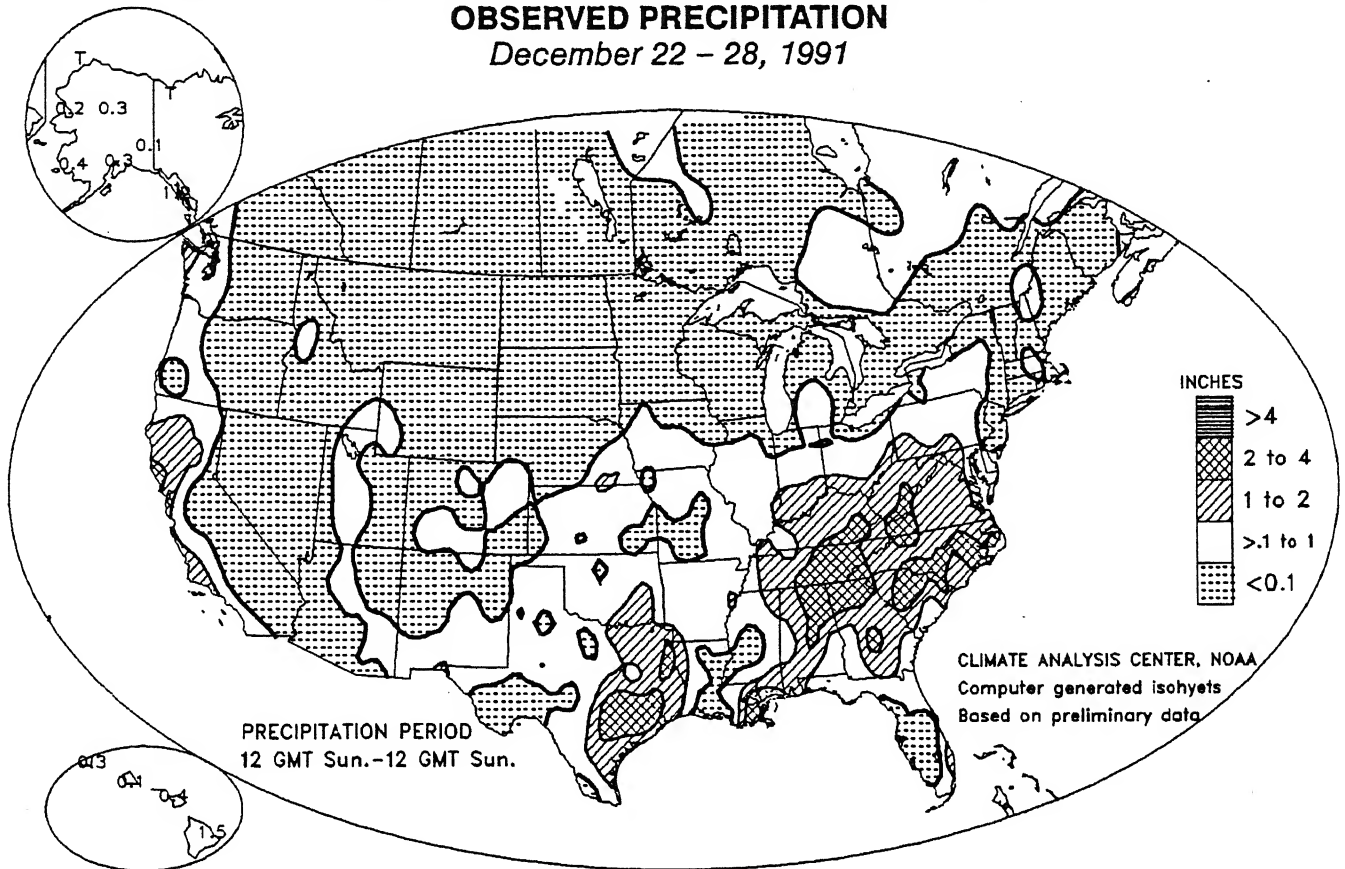
Abnormally cold conditions were limited to the northern New England, the southern Plains, and central Rockies [Table 3]. Weekly departures of –8°F to –14°F were observed at a few locations in western Colorado and southwestern Wyoming while departures of –3°F to –7°F were common across the remaining areas. In Alaska, unseasonably cold weather was limited to extreme western locations, with both Nome and St. Paul Island reporting departures of –7°F.

**TABLE 1. SELECTED STATIONS WITH 2.00 OR MORE INCHES OF PRECIPITATION DURING THE WEEK OF DECEMBER 22 – 28, 1991**

<u>STATION</u>	<u>TOTAL</u> <u>(INCHES)</u>	<u>STATION</u>	<u>TOTAL</u> <u>(INCHES)</u>
YAKUTAT, AK	5.54	HOUSTON/WILLIAM HOBBY, TX	2.57
ANNETTE ISLAND, AK	4.76	CHATTANOOGA, TN	2.50
CORDOVA/MILE 13, AK	4.68	AUSTIN/BERGSTROM AFB, TX	2.46
VALDEZ, AK	4.63	AUSTIN, TX	2.39
NEW ORLEANS NAS, LA	3.29	ANNISTON, AL	2.26
NEW ORLEANS/LAKE FRONT, LA	2.96	MACON, GA	2.13
CORPUS CHRISTI NAS, TX	2.75	COLLEGE STATION, TX	2.13
HOUSTON, TX	2.71	CHARLOTTE, NC	2.01
CROSSVILLE, TN	2.59	BILOXI/KEESLER AFB, MS	2.00

## OBSERVED PRECIPITATION

December 22 - 28, 1991



## DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)

December 22 - 28, 1991

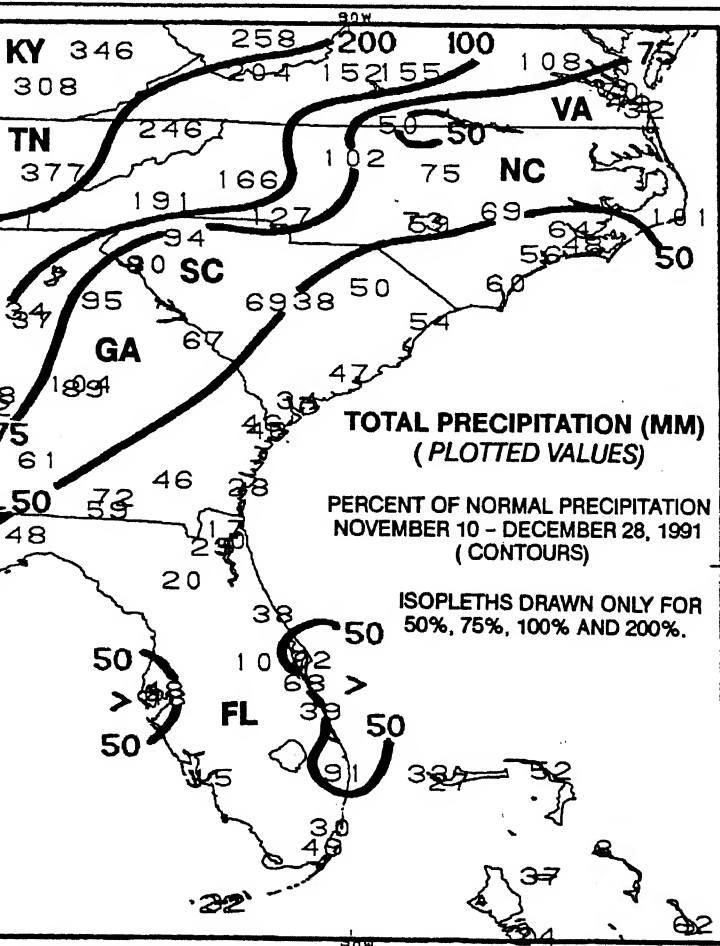


**TABLE 2. SELECTED STATIONS WITH TEMPERATURES AVERAGING 13.0°F OR MORE ABOVE NORMAL FOR THE WEEK OF DECEMBER 22 - 28, 1991**

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
IG DELTA, AK	+19.9	13.4	ALEXANDRIA, MN	+14.5	24.9
GRAND FORKS, ND	+19.0	26.2	WATERTOWN, SD	+14.1	26.8
INTERNATIONAL FALLS, MN	+18.1	22.5	LEWISTOWN, MT	+14.0	36.1
MINOT, ND	+17.8	29.1	ABERDEEN, SD	+14.0	26.7
WULFKA, AK	+17.5	9.1	DICKINSON, ND	+13.9	29.7
AMESTOWN, ND	+16.2	26.3	GLASGOW, MT	+13.8	27.3
ISMARCK, ND	+16.0	28.0	DEVIL'S LAKE, ND	+13.7	21.4
ARGO, ND	+15.8	25.1	MILES CITY, MT	+13.5	32.2
GREAT FALLS, MT	+15.0	38.8	SIOUX FALLS, SD	+13.5	30.2
WILLISTON, ND	+15.0	27.2	EAU CLAIRE, WI	+13.3	27.6
T YUKON, AK	+14.8	-6.4	ROCHESTER, MN	+13.3	27.5
UT BANK, MT	+14.7	33.4	MASON CITY, IA	+13.2	29.5
VARROAD, MN	+14.7	20.7	PARK FALLS, WI	+13.2	25.9

**TABLE 3. SELECTED STATIONS WITH TEMPERATURES AVERAGING 3.0°F OR MORE BELOW NORMAL FOR THE WEEK OF DECEMBER 22 - 28, 1991**

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
LAMOSA, CO	-16.0	0.4	OGDEN/HILL AFB, UT	-4.3	23.8
OCK SPRINGS, WY	-14.2	6.8	BETHEL, AK	-4.1	-0.8
ANDER, WY	-9.5	11.8	AUSTIN/BERGSTROM AFB, TX	-4.1	47.1
RICE, UT	-8.4	16.3	ADAK, AK	-4.0	29.6
OME, AK	-7.1	-3.9	MIDLAND, TX	-4.0	40.6
T PAUL ISLAND, AK	-7.0	20.6	BANGOR, ME	-3.9	16.1
ELENA, MT	-5.8	15.6	ABILENE, TX	-3.7	41.2
ASTPORT, ME	-4.8	20.3	POCATELLO, ID	-3.0	22.0
RAND JUNCTION, CO	-4.8	21.6	COLLEGE STATION, TX	-3.0	47.6

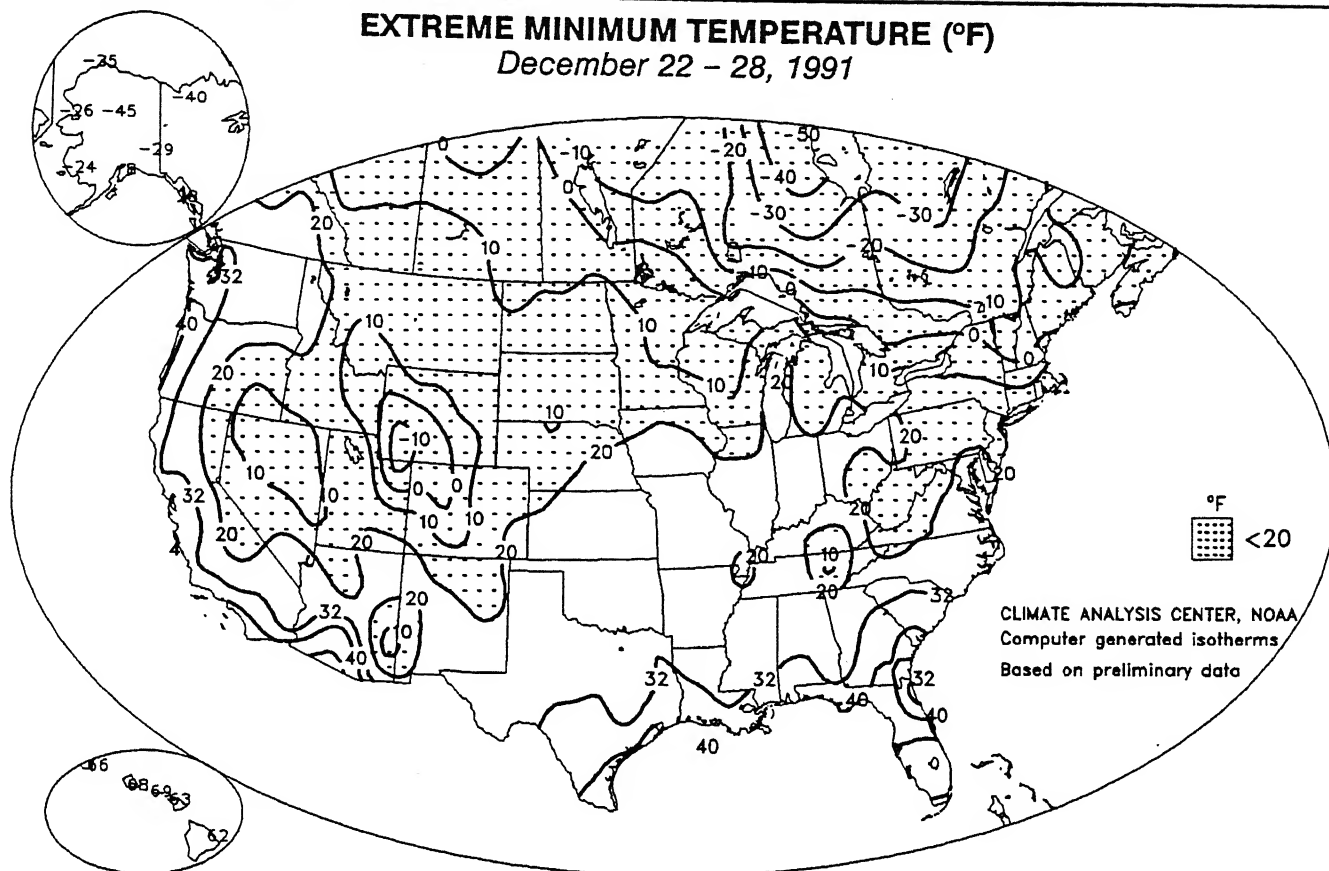


**FIGURE 1.** Despite recent rains of more than 50 mm across parts of the Carolinas and Georgia, much of the southern Atlantic region has still received well below normal precipitation (<75%) for the last seven weeks. During this period, most locations in the eastern Carolinas, southeastern Georgia, and Florida have accumulated less than 70 mm of precipitation, or less than half of normal.



# EXTREME MINIMUM TEMPERATURE (°F)

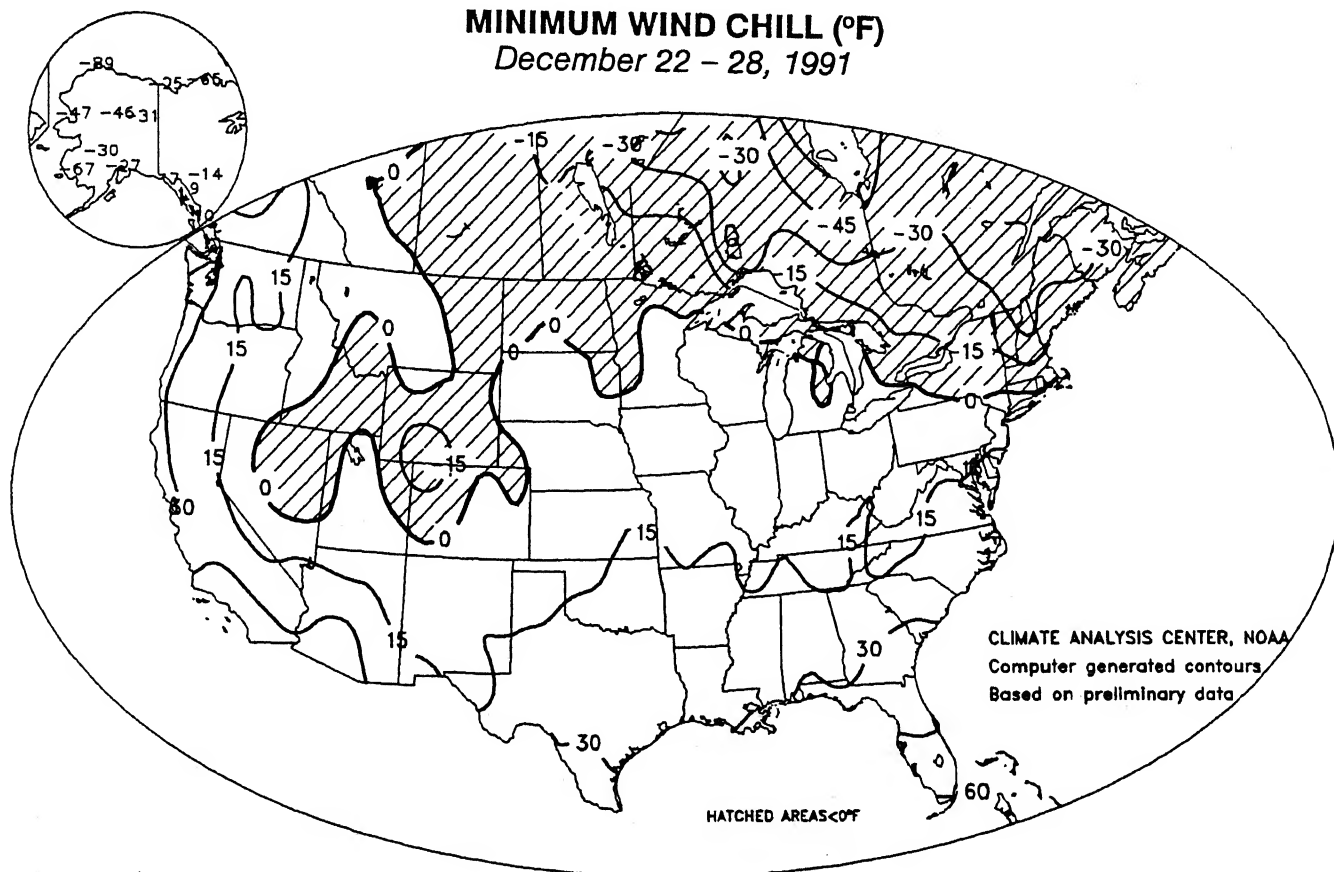
December 22 - 28, 1991



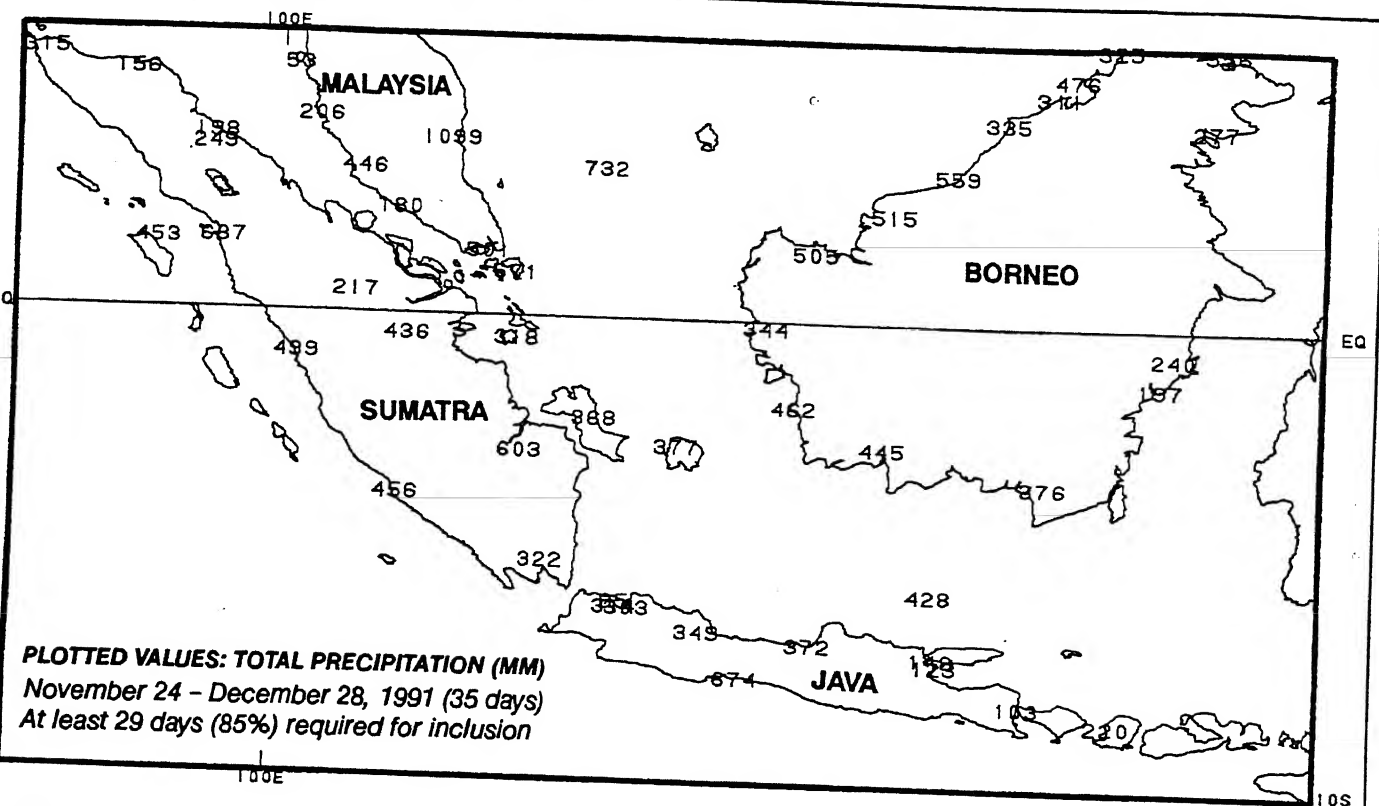
Bitterly cold weather was limited to northern New England and the higher elevations in the central Rockies, where subzero temperatures (top) and dangerous wind chills below  $-15^{\circ}\text{F}$  (bottom) were experienced.

# MINIMUM WIND CHILL (°F)

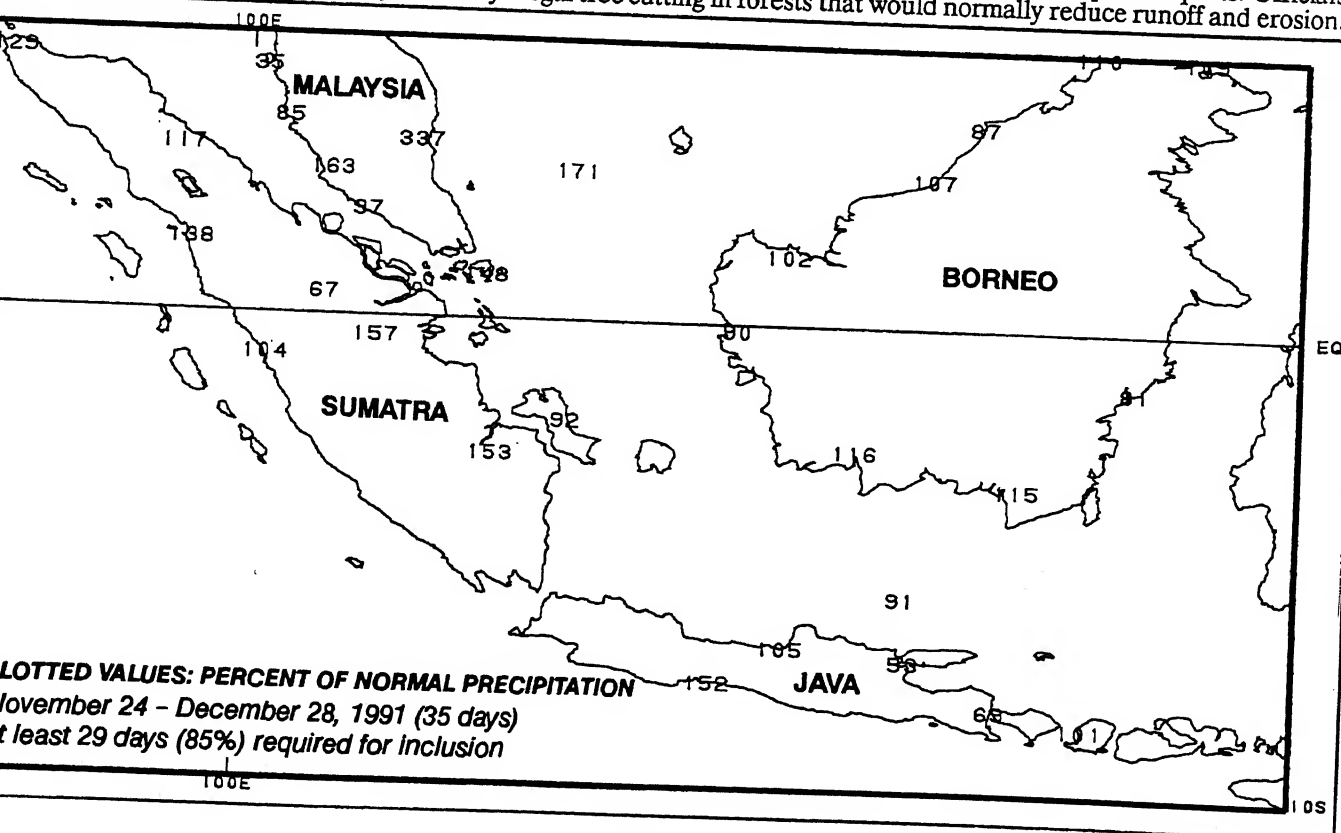
December 22 - 28, 1991



# GLOBAL CLIMATE HIGHLIGHTS FEATURE



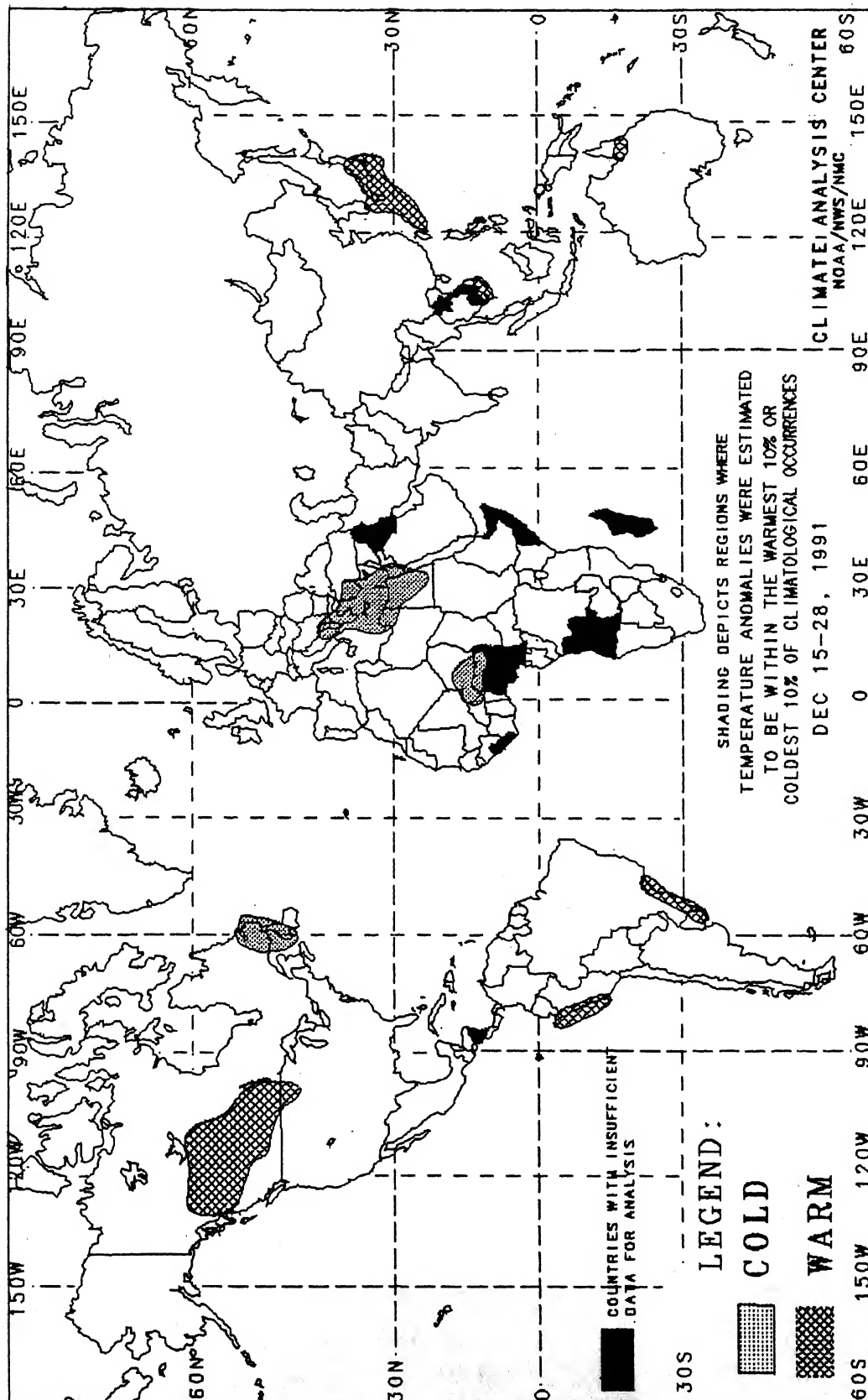
Following widespread drought during August through October across much of Indonesia, heavy rains have drenched much of the western and central portions of the nation since late November (top). Several locations have received more than 150% of their normal precipitation during this period (bottom). Floods and landslides in West Sumatra province have killed several people and caused nine rivers to overflow, forcing the evacuation of at least 67 villages, according to press reports. Officials say the floods and landslides were aggravated by illegal tree cutting in forests that would normally reduce runoff and erosion.





# 2-WEEK GLOBAL TEMPERATURE ANOMALIES

DECEMBER 15 - 28, 1991



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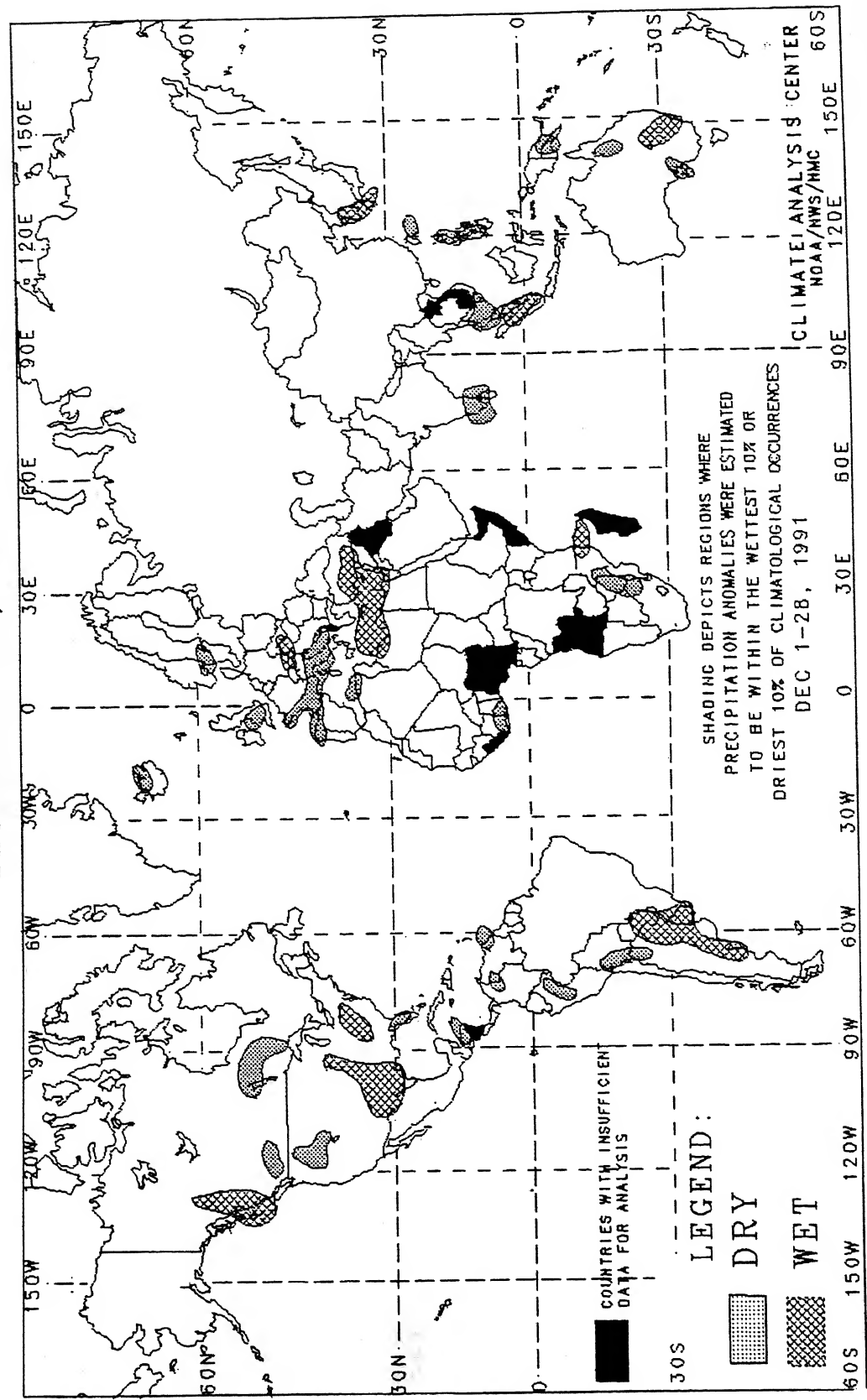
e of temperature

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

# 4-WEEK GLOBAL PRECIPITATION ANOMALIES

DECEMBER 1 - 28, 1991



In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some-dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

